

2007 Western Bridge Engineers' Seminar – Boise, Idaho



Kings Corner Railroad Overpass



James D. Porter, P.E.
Corporate Transportation Manager
J-U-B ENGINEERS, Inc.

AMITY STRUCTURE S&L

INTERSECTED ROUTE	STA. AT E. AMITY AVENUE	STA. AT E. INTERSECTED ROUTE
E. RAILROAD ST.	27+95.15	34+59.92
TRACK 1 (MAIN LINE) ±	29+38.00	M.P. 455.03
2ND ST. S. EXT.	23+25.13	12+59.51

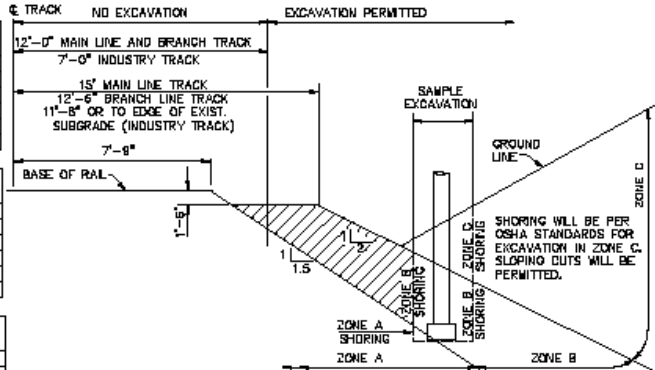
* EXISTING CROSSING NO. 019390J

TRAFFIC DATA

E. AMITY AVENUE DESIGN DESIGNATION	
ADT 2005	9825
ADT 2025	14305
DHV 2005	539
DHV 2025	800
D	60/40%
V	35 MPH

E. RAILROAD STREET DESIGN DESIGNATION	
ADT 2005	1905
ADT 2025	2830
DHV 2005	66
DHV 2025	125
D	60/40%
V	35 MPH

2ND ST. S. EXT DESIGN DESIGNATION	
ADT 2005	5680
ADT 2025	8410
DHV 2005	298
DHV 2025	400
D	60/40%
V	35 MPH



TRACK PROTECTION SHORING REQUIREMENTS
N.T.S.

SHORING MUST BE DESIGNED FOR RAILROAD LIVE LOAD SURCHARGE IN ADDITION TO OSHA STANDARDS FOR EXCAVATION IN ZONE A. APPLICABLE RAILROAD LIVE LOAD: COOPER E80

ONLY VERTICAL SHORING WILL BE PERMITTED FOR EXCAVATION IN THIS ZONE. (NO SLOPING CUTS)

QUANTITIES			
ITEM NO.	DESCRIPTION	QUANTITY	UNIT
005-545A	GRANULAR BORROW	802	TONNE
210-00A	STRUCTURE EXCAVATION SCH NO. 1	860	CY
210-01A	CONCRETE CLASS 40 MP SCH NO. 1	240	CY
620-155A	CONCRETE CLASS 40 MP SCH NO. 1	140	CY
522-310A	CONCRETE CLASS 40 MP SCH NO. 2	1303	CY
522-410A	APPROACH SLAB	291	SY
920-010A	NETA, REINFORCEMENT SCH NO. 1	411929	LB
920-015A	NETA, REINFORCEMENT SCH NO. 2	118323	LB
520-030A	EPOXY COATED NETA, REINFORCEMENT	1	LB
124-031A	STEEL BRACKET (APPROX 20" x 12" x 1/2")	8	EA
921-010A	COMB BICYCLE & TRAFFIC RAILING	1296	LF
525-030A	FURNISH & DRIVE PILE (16" x 12 x 74)	573	LF
525-040A	FURNISH & DRIVE PILE (16" x 14 x 117)	2069	LF
920-125A	FURNISH & INSTALL 16" x 11" x 11" (16" x 12 x 74)	43	EA
920-137A	FURNISH & DRIVE TEST PILE (16" x 14 x 117)	28	LF
525-225A	FURN & INSTALL POINT 12	28	CAC
120-201A	FURN & INSTALL POINT 14	67	EA
950-202A	ROCK ANCHORS	21	EA
921-024A	EXPANSION JOINT	151	LF
521-25A	BRIDGE BEARING SCHEME	0.6	LS
921-462A	INSTALL CONC RET SURFACE	797	SY
921-75A	ELECTRICAL ITEMS	0.6	LS

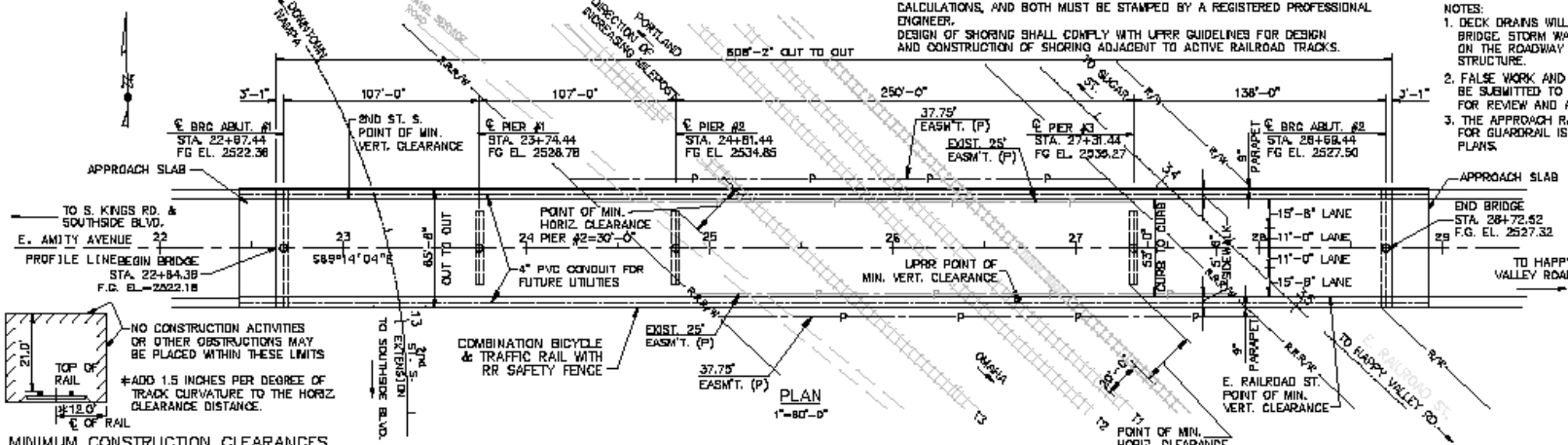
INDEX OF SHEETS	
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3-4	SITUATION AND LAYOUT/RAILROAD PROFILES
5	SITUATION AND LAYOUT
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9	FOOTING LAYOUT AND PILE NOTES
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37	SIDEWALK & PARAPET FOR RAILROAD SAFETY FENCE
38	EXPANSION PLATE FOR SIDEWALK
39	LIGHT POLE SUPPORT DETAILS
40	METAL REINFORCEMENT

TRACK PROTECTION SHORING:
ALL DIMENSIONS ARE MEASURED PERPENDICULAR TO Q TRACK. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRACK PROTECTION SHORING BEFORE COMMENCING EXCAVATION. PRIOR TO COMMENCING ANY WORK, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE ENGINEER AND UPRR, DETAILED PLANS INDICATING THE NATURE AND EXTENT OF THE TRACK PROTECTION SHORING PROPOSED. SHORING SHALL BE DESIGNED FOR COOPER E80 LIVE LOAD SURCHARGE AND THE UPRR MAY IMPOSE MORE STRINGENT REQUIREMENTS AS CONDITIONS WARRANT.

FOR EXCAVATIONS WHICH ENCLOSE INTO RAILROAD LIVE LOAD SURCHARGE ZONE, SHORING PLANS SHALL BE ACCOMPANIED BY A COPY OF THE DESIGN CALCULATIONS, AND BOTH MUST BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER.

DESIGN OF SHORING SHALL COMPLY WITH UPRR GUIDELINES FOR DESIGN AND CONSTRUCTION OF SHORING ADJACENT TO ACTIVE RAILROAD TRACKS.

- NOTES:
- DECK DRAINS WILL NOT BE USED ON THIS BRIDGE. STORM WATER WILL BE COLLECTED ON THE ROADWAY AT EACH END OF THE STRUCTURE.
 - FALSE WORK AND SHORING PLANS SHALL BE SUBMITTED TO THE ENGINEER AND UPRR FOR REVIEW AND APPROVAL.
 - THE APPROACH RAIL AND TRANSITION SECTION FOR GUARDRAIL IS INCLUDED IN THE ROADWAY PLANS.



MINIMUM CONSTRUCTION CLEARANCES
N.T.S.

NO.	DATE	BY	DESCRIPTION
1	1/27/05	JAN.A.	CLARIFICATION/CORRECTION

DESIGNED JUB	SCALE SHOWN AS PER 24722P PRINTS ONLY	DATE DEC. 2004
DRAWN JUB	CADD FILE NO. 11863-111-01	DATE DEC. 2004
CHECKED JUB	DRAWING DATE DEC. 2004	

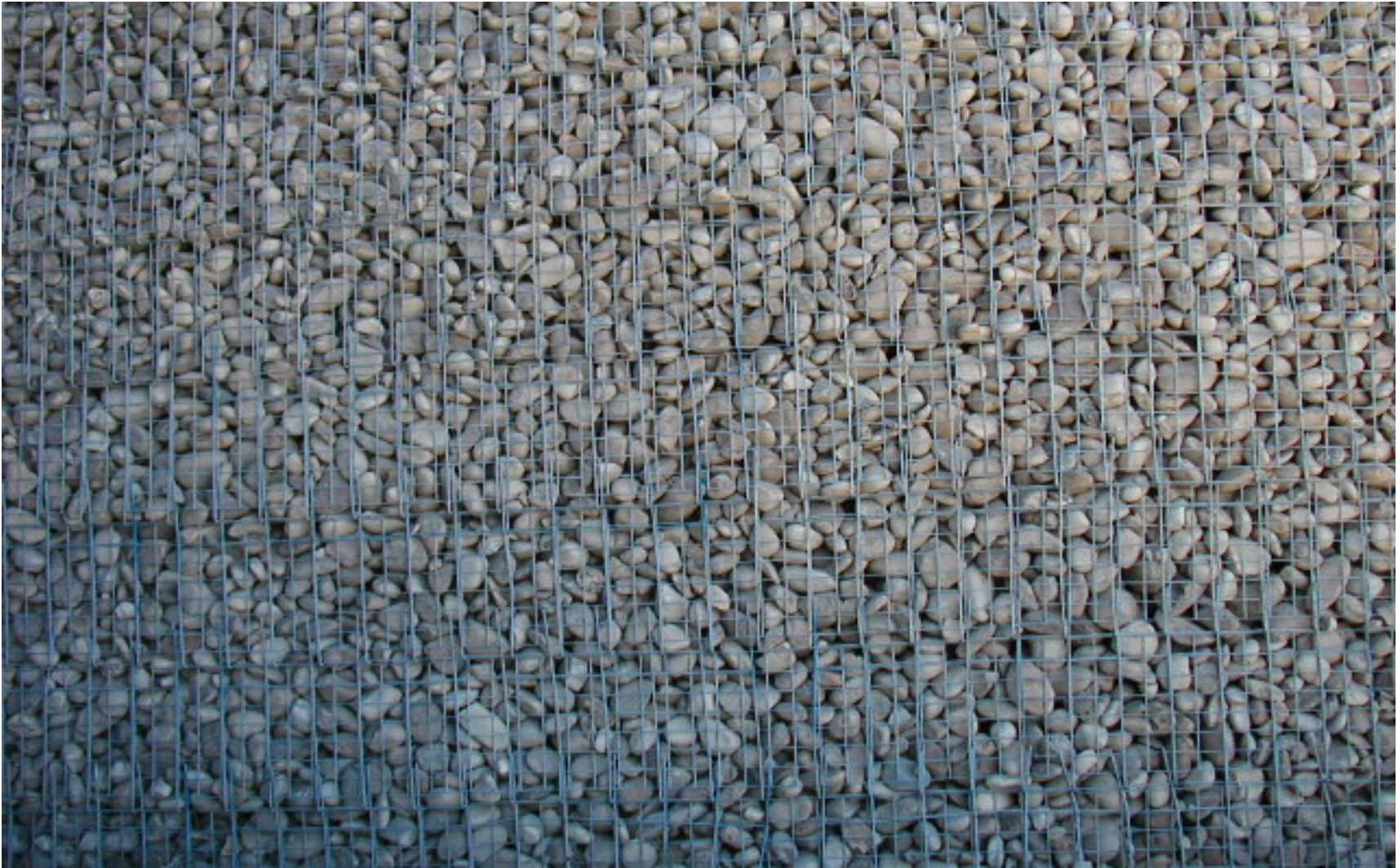
CITY OF NAMPA
KING'S CORNER
PROJECT NO. 02-99148
DEPARTMENT OF PUBLIC WORKS
413 2ND STREET SOUTH
NAMPA, IDAHO

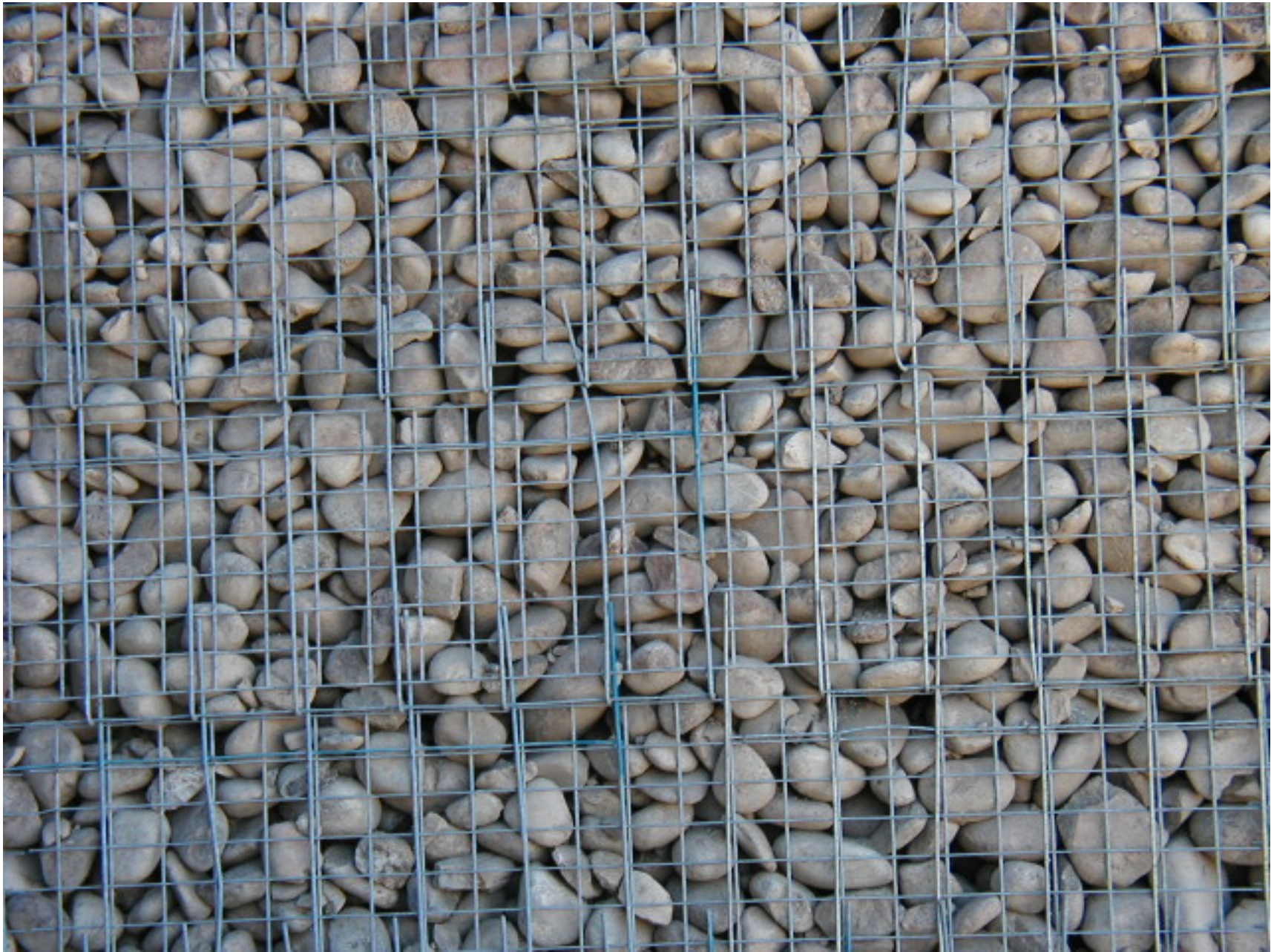
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SITUATION AND LAYOUT
608' STEEL PLATE GIRDER OVERPASS
E. AMITY AVENUE OVER OREGON SHORTLINE RAILROAD
STA. 25+58

LAST UPDATED:
4-27-08
SHEET
1
OF 40

MSE ABUTMENT WALL







SEMI-ITEGRAL ABUTMENT

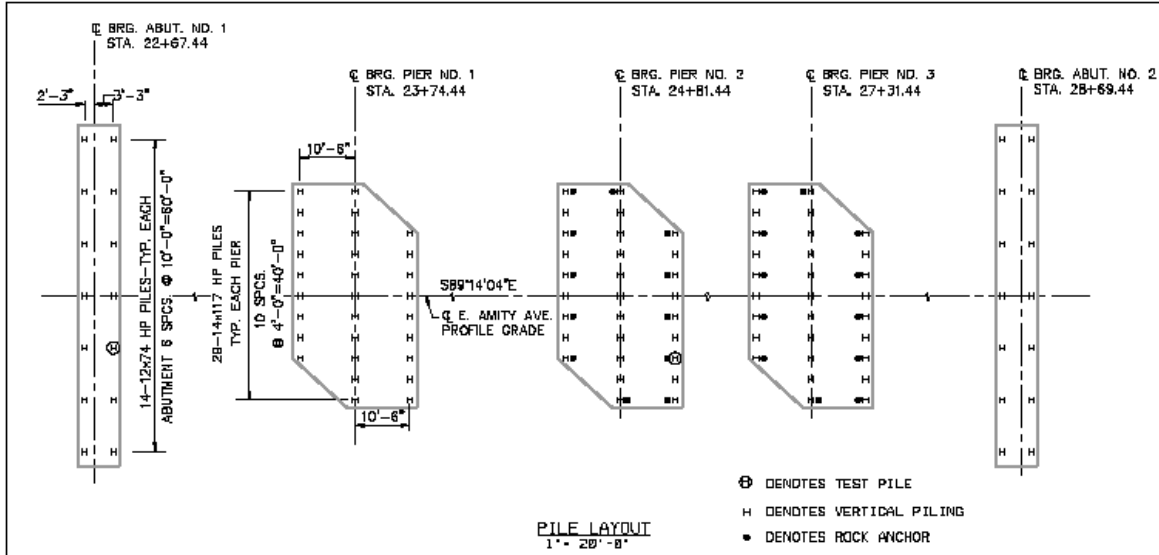


GAP BETWEEN MSE
WALL AND ABUTMENT

MSE ABUTMENT WALL CONSTRUCTION

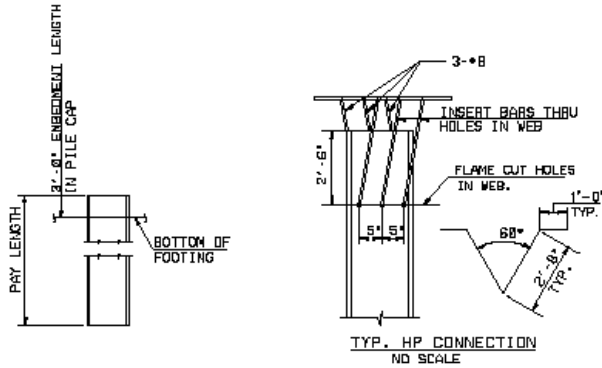
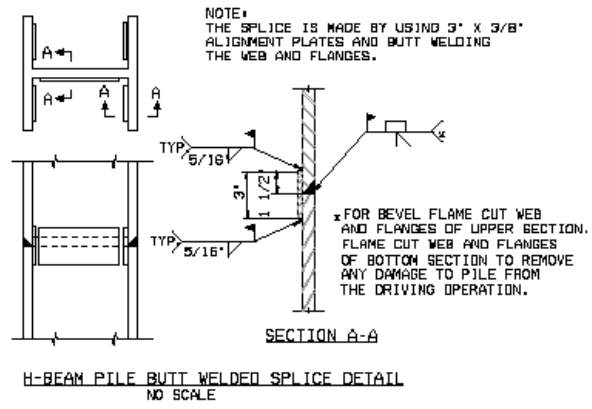


PIER FOOTING PILE LAYOUT



⊕ DENOTES TEST PILE
H DENOTES VERTICAL PILING
• DENOTES ROCK ANCHOR

- NOTES**
- MATERIAL SPECIFICATIONS**
- H-BEAM PILES SHALL BE HP 12X74 AT ABUTMENTS AND 14X117 AT PIERS AND CONFORM TO ASTM A-36.
 - SPLICE PLATES SHALL CONFORM TO ASTM A-36.
 - ALL PILES SHALL HAVE PILE POINTS. PILE POINTS SHALL BE AS SHOWN IN THE TABLE.
 - AT THE CONTRACTOR'S OPTION, PREFABRICATED SPLICERS MAY BE USED IN PLACE OF THE BUTT WELDED SPLICE WITH PLATES. SPLICES SHALL BE AS SHOWN IN THE TABLE.
- WELDING**
- QUALIFICATION OF WELDERS, MATERIALS, AND PROCEDURES FOR WELDING SHALL CONFORM TO THE CURRENT EDITION OF AASHTO/AWS D1.5.
 - WELDING OF PILE POINTS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- DRIVING DATA**
- THE CONTRACTOR SHALL FURNISH THE TYPE AND ALL OPERATION SPECIFICATIONS OF THE HAMMER TO THE ENGINEER 15 DAYS PRIOR TO MOBILIZING EQUIPMENT TO SITE.
 - ALL PILING SHALL BE DRIVEN TO REFUSAL ON BEDROCK AS DETERMINED BY A WAVE EQUATION ANALYSIS PERFORMED BY THE ENGINEER UPON RECEIPT OF THE HAMMER SPECIFICATIONS.
 - THE HAMMER USED FOR DRIVING PILING SHALL HAVE A RATED ENERGY BETWEEN 40,000 AND 60,000 FOOT-POUNDS FOR HP 12X74 AND 50,000 TO 70,000 FOOT-POUNDS FOR HP 14X117.
 - PILING SHALL BE DRIVEN TO REFUSAL ON BEDROCK. NOTIFY ENGINEER IF PILE CANNOT BE DRIVEN TO BEDROCK OR IF PILE IS DRIVEN THRU BEDROCK. TEST PILING SHALL BECOME A PART OF THE COMPLETED STRUCTURE. ELEVATIONS ARE SHOWN FOR ESTIMATING PURPOSES ONLY.



PILE SCHEDULE			
MANUFACTURER	PHONE	POINT	SPLICE
APF ASSOCIATED PILE & BRIDGEWORK	800-526-9047	77600	HP-38000
FOUNDATION PRODUCTS, INC.	201-337-5748	H-776	HP-380
PAI PILING ACCESSORIES (INC.)	800-280-9958	PAR SERIES	
ICE INTERNATIONAL CONSTRUCTION EQUIPMENT, INC.	800-348-1898	HPH-RB SERIES	HSA SERIES

PILE SCHEDULE				
LOCATION	NO.	ELEVATION		ESTIMATED PILE LENGTH
		CUT OFF	EST TIP ELEV	
ABUT. +1	14	2582.12	2459	43
PIER +1	29	2497.49	2462	36
PIER +2	29	2498.31	2470	28
PIER +3	29	2497.46	2469	29
ABUT. +2	14	2581.20	2471	30

DESIGNED BY: S.M.S.	DESIGN CHECKED BY: S.M.S.
DATE: 12/27/03	DESCRIPTION: CLARIFICATION/ CORRECTION

SEALS SHOWN ARE FOR 34/322 PRINTS ONLY	CADD FILE NO. 11083-111-09
DRAWING DATE: DEC., 2004	

CITY OF NAMPA
KING'S CORNER
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FOOTING LAYOUT AND PILE NOTES

606' STEEL PLATE GIRDER OVERPASS
E. AMITY AVENUE OVER OREGON SHORTLINE RAILROAD
STA. 25+68

PLOT SCALE: 1=64

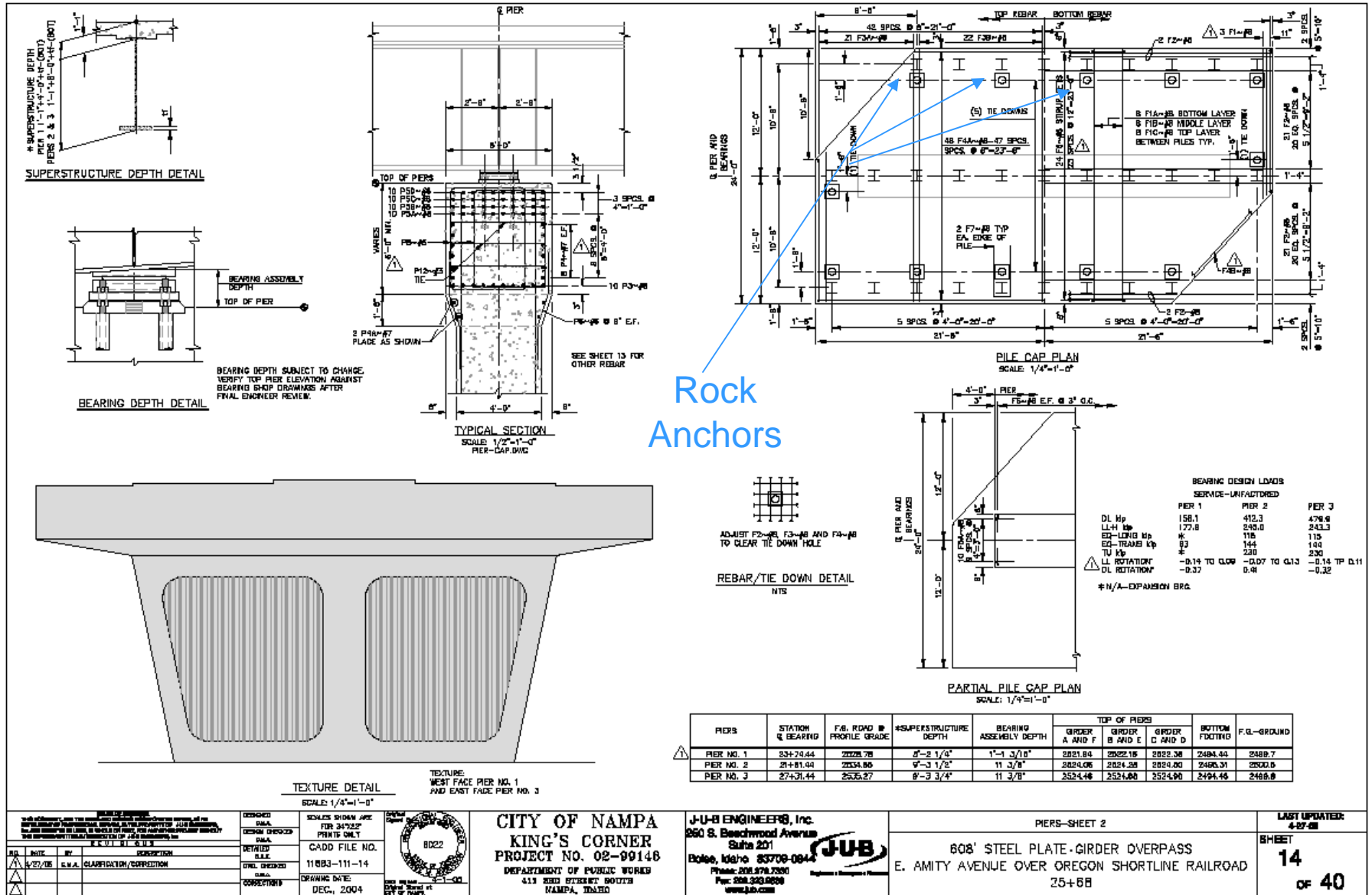
LAST UPDATED: 4-27-04

SHEET 9 OF 40

PIER PILE CAP WITH ROCK ANCHOR STRANDS



ROCK ANCHOR LOCATIONS



NO.	DATE	BY	DESCRIPTION
1	1/27/06	C.M.A.	CLARIFICATION/CORRECTION

DESIGNER	SCALE	DATE
DESIGN CHECKED	SCALE	DATE
DETAILS	SCALE	DATE
CHECKED	SCALE	DATE
DATE	SCALE	DATE
DATE	SCALE	DATE

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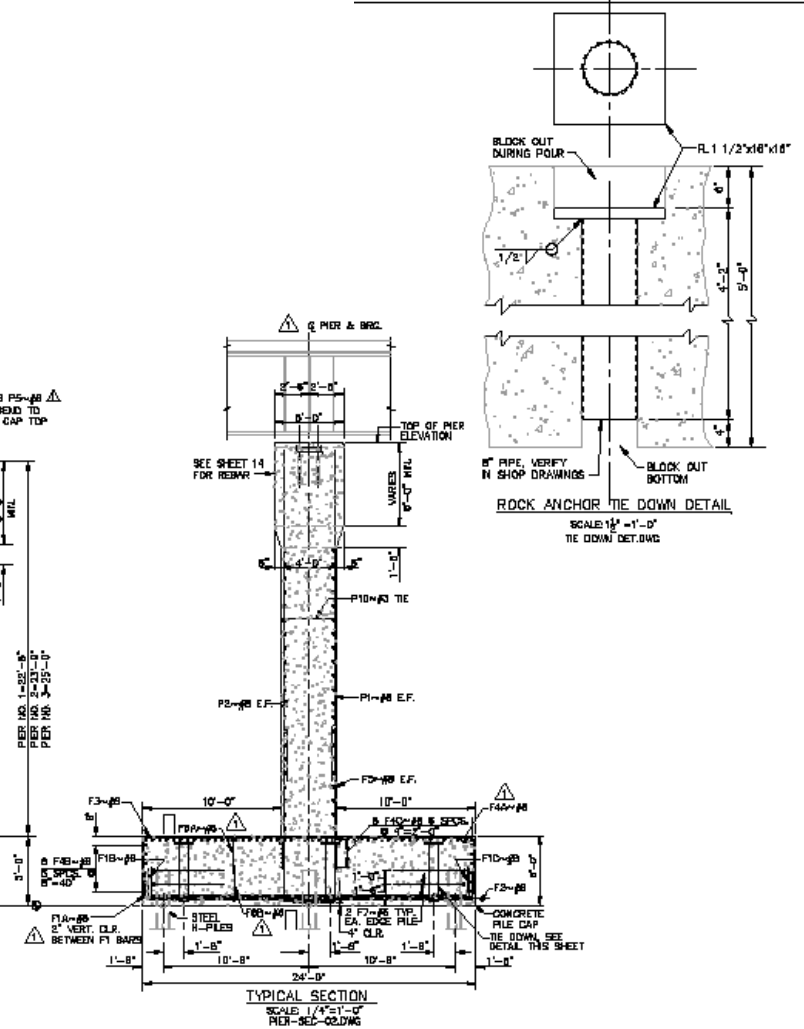
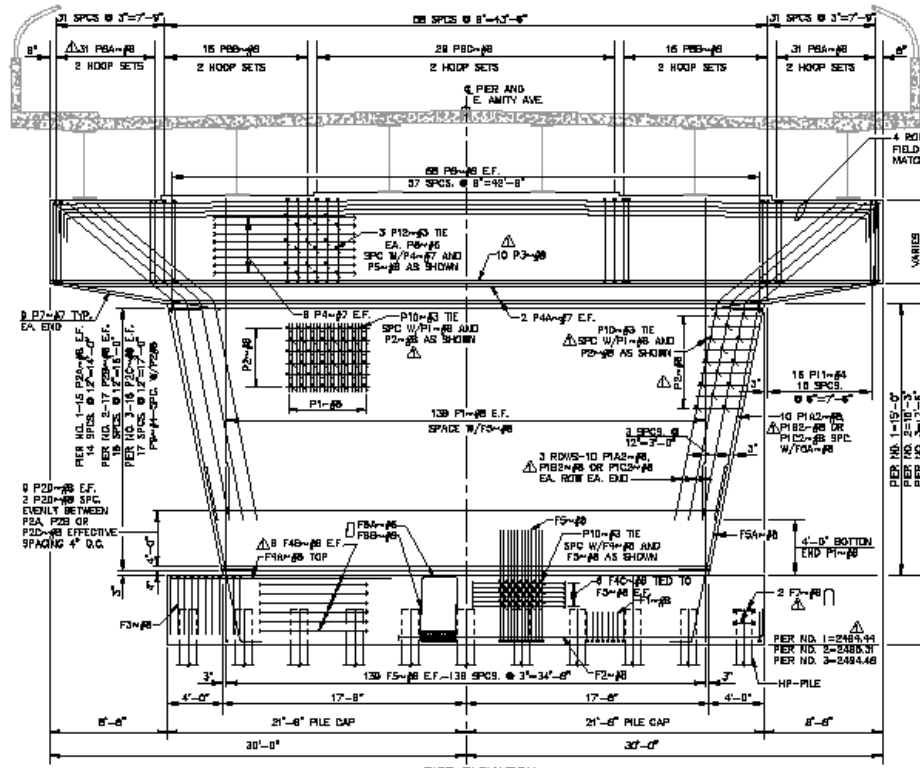
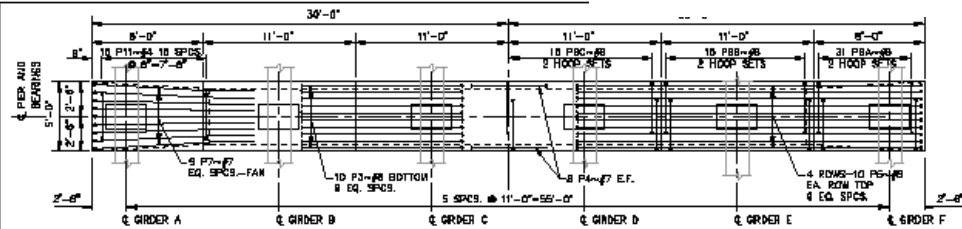
PIERS-SHEET 2
 608' STEEL PLATE GIRDER OVERPASS
 E. AMITY AVENUE OVER OREGON SHORTLINE RAILROAD
 25+68

LAST UPDATED:
 4-27-08
SHEET
14
 of 40



ROCK ANCHOR
STRAND PRIOR TO
PLACING PILE CAP

ROCK ANCHOR DETAILS



NO.	DATE	BY	REVISION
1	1/27/05	C.L.M.H.	CLARIFICATION/CONNECTION


DESIGNED D.M.A.	SCALE: SHOWN ARE FOR 34" DEEP PRINTS ONLY
DESIGN CHECKED D.M.A.	CADD FILE NO.
DETAILS D.L.K.	11683-111-13
CHECKED D.M.A.	DRAWING DATE:
CONNECTIONS	DEC., 2004

CITY OF NAMPA
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PERS-SHEET 1
 608' STEEL PLATE GIRDER OVERPASS
 E. AMITY AVENUE OVER OREGON SHORTLINE RAILROAD
 STA. Z5+68

LAST UPDATED:
 4-27-08
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 OF 40

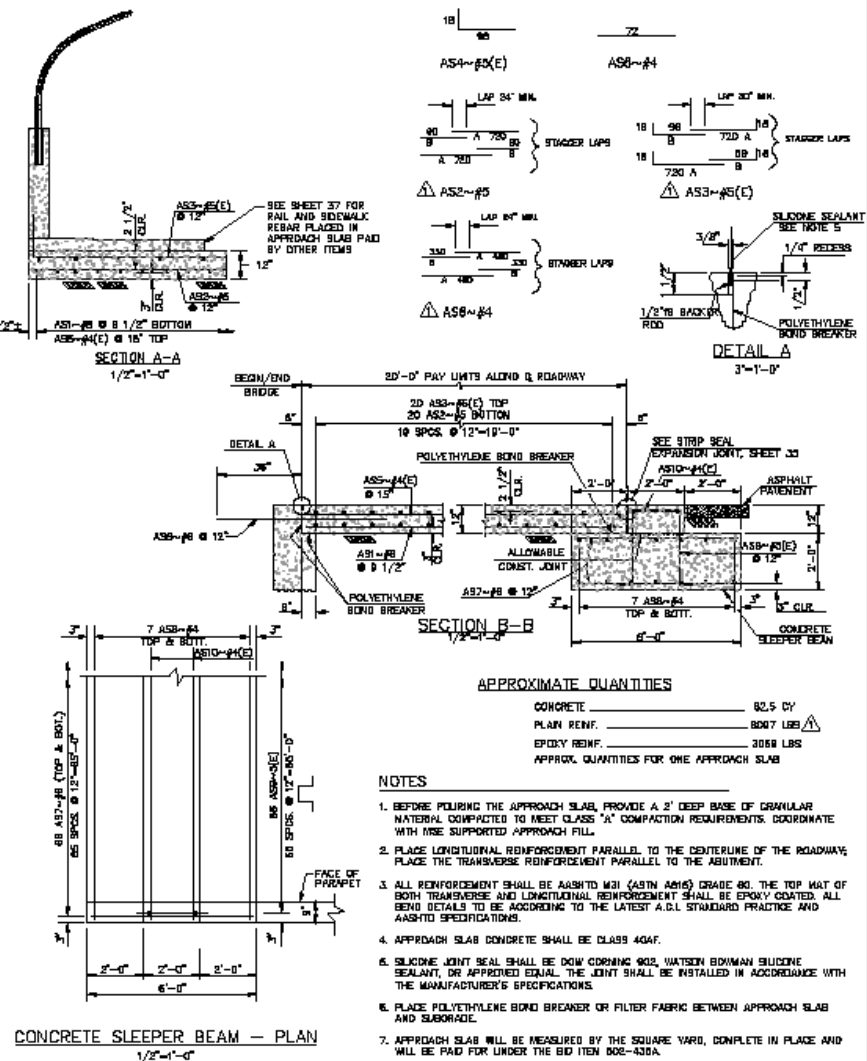
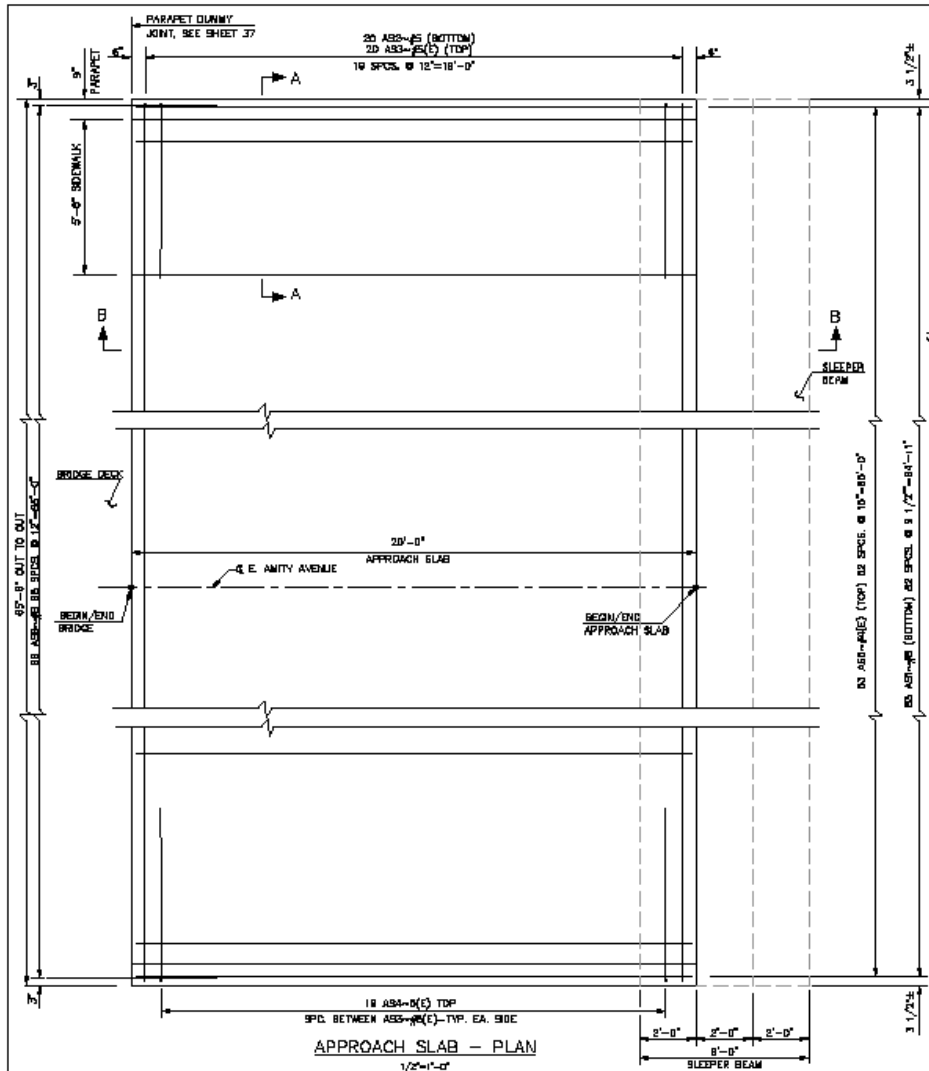


ROCK ANCHOR
READY FOR
TENSIONING

A red hydraulic jack is mounted on a black metal stand. It is connected to a black hose that leads to a rock anchor. The rock anchor is a large, cylindrical metal component with a threaded end. The jack is being used to apply tension to the anchor. The background shows a construction site with rebar and concrete.

ROCK ANCHOR
BEING TENSIONED

APPROACH SLAB DETAILS



APPROXIMATE QUANTITIES

CONCRETE	82.5 CY
PLAIN REINF.	8007 LBS
EPDXY REINF.	3068 LBS

APPROX. QUANTITIES FOR ONE APPROACH SLAB

- NOTES**
- BEFORE POURING THE APPROACH SLAB, PROVIDE A 2" DEEP BASE OF GRANULAR MATERIAL COMPACTED TO MEET CLASS "A" COMPACTION REQUIREMENTS. COORDINATE WITH MSE SUPPORTED APPROACH FILL.
 - PLACE LONGITUDINAL REINFORCEMENT PARALLEL TO THE CENTERLINE OF THE ROADWAY. PLACE THE TRANSVERSE REINFORCEMENT PARALLEL TO THE ABUTMENT.
 - ALL REINFORCEMENT SHALL BE AASHTO M31 (ASTM A615) GRADE 60. THE TOP MAT OF BOTH TRANSVERSE AND LONGITUDINAL REINFORCEMENT SHALL BE EPOXY COATED. ALL BEND DETAILS TO BE ACCORDING TO THE LATEST A.S.I. STANDARD PRACTICE AND AASHTO SPECIFICATIONS.
 - APPROACH SLAB CONCRETE SHALL BE CLASS 404F.
 - SILICONE JOINT SEAL SHALL BE DOW CORNING 902, WATSON BOWMAN SILICONE SEALANT, OR APPROVED EQUAL. THE JOINT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
 - PLACE POLYETHYLENE BOND BREAKER OR FILTER FABRIC BETWEEN APPROACH SLAB AND SUBGRADE.
 - APPROACH SLAB WILL BE MEASURED BY THE SQUARE YARD, COMPLETE IN PLACE AND WILL BE PAID FOR UNDER THE BID ITEM 802-435A.

<p>APPROVED FOR CONSTRUCTION</p> <p>DATE: 12/27/06</p>		<p>DESIGNED BY: [Signature]</p> <p>CHECKED BY: [Signature]</p> <p>DATE: DEC, 2004</p>	<p>SCALE: SHOWN AS PER 24722P PRINTS ONLY</p> <p>CADD FILE NO. 11063-111-34</p> <p>DRAWING DATE: DEC, 2004</p>	
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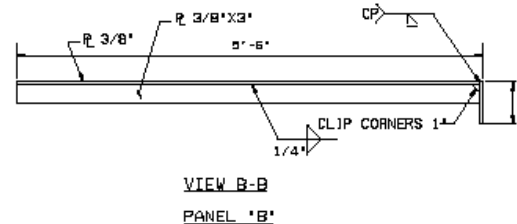
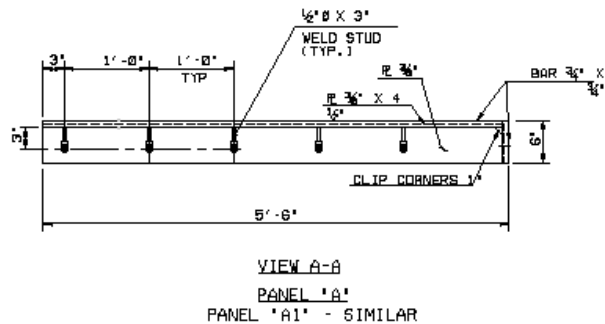
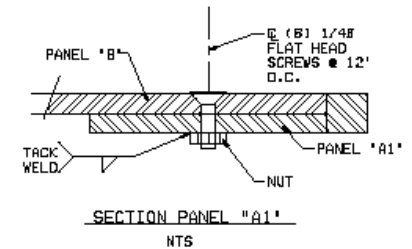
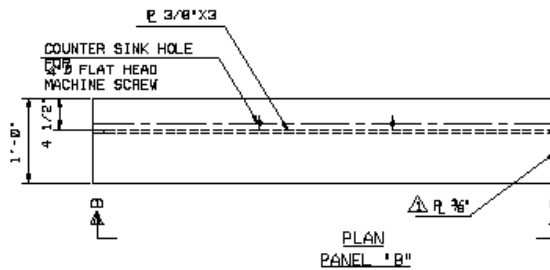
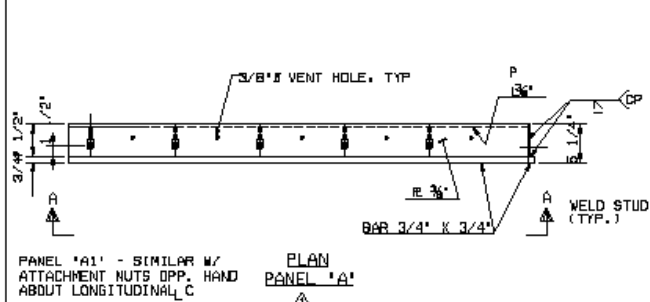
APPROACH SLAB

608' STEEL PLATE GIRDER OVERPASS
 E. AMITY AVENUE OVER OREGON SHORTLINE RAILROAD
 STA. 25+58

LAST UPDATED: 4-07-08

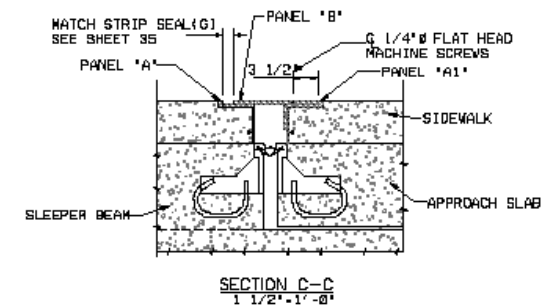
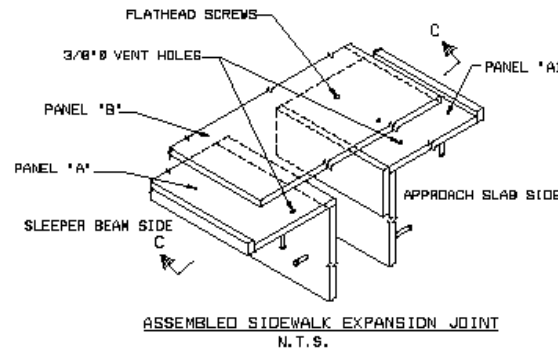
SHEET **34** OF 40

SIDEWALK EXPANSION PLATE



NOTES

1. ALL STEEL PLATES, NUTS & SCREWS SHALL BE STAINLESS STEEL.
2. FOR DETAILS OF EXPANSION JOINT, SEE SHEET NO. 35.
3. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER IN ACCORDANCE WITH SECTION 584 AND SHALL INCLUDE COMPLETE DIMENSIONS AND DETAILS OF FABRICATION INCLUDING AN ERECTION DIAGRAM. MATERIALS BEING USED SHALL BE CLEARLY SPECIFIED. BEFORE PROJECT COMPLETION, THE CONTRACTOR SHALL FURNISH THE ENGINEER A 22" X 34" REPRODUCIBLE MYLAR COPY OF THE APPROVED SHOP DRAWINGS.
4. SIDEWALK EXPANSION PLATE SHALL BE INCIDENTAL TO BID ITEM 5501-06A EXPANSION JOINT.



NO.	DATE	BY	DESCRIPTION
1	1/27/00	G. H. H.	CLARIFICATION/ CORRECTION

DESIGNED	SCALE	SCALE SHOWN	DATE
DAVA	AS SHOWN	FOR 24" X 36"	11/23/03
DRAWN	DATE	CADD FILE NO.	DATE
DAVA	11/23/03	11993-111-36	DEC, 2004

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EXPANSION PLATE FOR SIDEWALK

608' STEEL PLATE-GIRDER OVERPASS
 E. AMITY AVENUE OVER OREGON SHORTLINE RAILROAD
 STA. 25+58

LAST UPDATED:
 4-27-08

SHEET
38
 OF 40

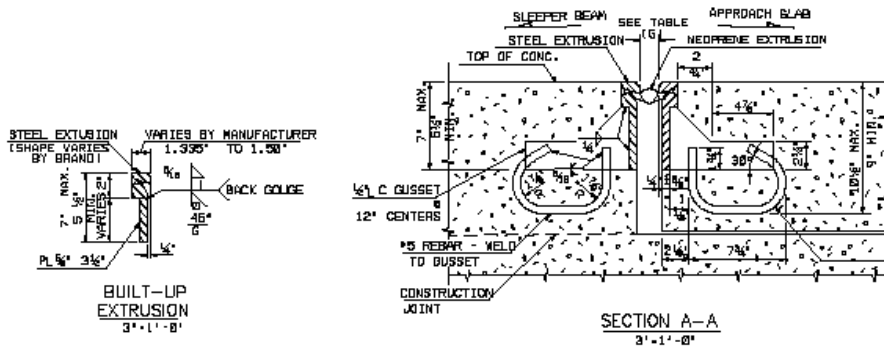
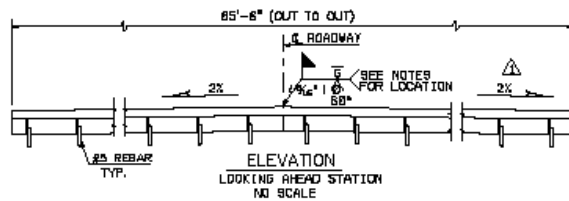
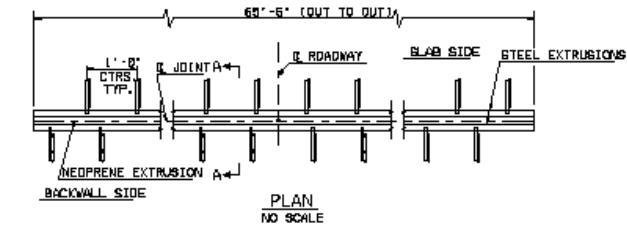
PLATE OVER EXPANSION JOINT THROUGH SIDEWALK





SIDEWALK
EXPANSION PLATE

EXPANSION JOINT DETAILS



NOTES

MATERIALS AND SPECIFICATIONS

1. STEEL PLATE AND EXTRUSION SHALL CONFORM TO AASHTO M270, GRADE 36.
2. THE STRIP SEAL SHALL BE FURNISHED AND INSTALLED IN ONE CONTINUOUS PIECE.
3. WELDING SHALL BE DONE ACCORDING TO CURRENT AASHTO SPECIFICATIONS.

FABRICATION

4. ALL EXPOSED SURFACES SHALL BE PAINTED CONCRETE GRAY. THE PAINT SYSTEM TO BE USED SHALL BE SHOWN ON THE SHOP DRAWINGS.
5. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER IN ACCORDANCE WITH SECTION 504 AND SHALL INCLUDE COMPLETE DIMENSIONS AND DETAILS OF FABRICATION INCLUDING AN ERECTION DIAGRAM. MATERIALS BEING USED SHALL BE CLEARLY SPECIFIED. BEFORE PROJECT COMPLETION, THE CONTRACTOR SHALL FURNISH THE ENGINEER A 22" X 34" REPRODUCIBLE MYLAR COPY OF THE APPROVED SHOP DRAWINGS.
6. DUE TO THE LENGTH OF STEEL EXTRUSIONS AND THE JOINT PROFILE, COMPLETE PENETRATION GROOVE WELD SHOP SPLICES WILL BE PERMITTED. NO WELD SHALL BE PERMITTED IN THE INTERVAL SECTION OF THE STEEL EXTRUSION WHERE THE NEOPRENE STRIP SEAL IS LOCATED.
7. THE SHOP DRAWINGS SHALL SHOW THE LOCATION OF ALL SPLICES, THE FINAL LINE AND GRADE OF THE JOINT. ALL NECESSARY WELDING INFORMATION, AND THE METHOD OF SUPPORT DURING THE DECK POURS.
8. THE LINE AND GRADE OF THE JOINT SHALL CONFORM TO THAT SHOWN ON THIS SHEET.
9. THE ELEVATION OF THE POINTS SHOWN IN THE JOINT PROFILE DETAIL MAY VARY NO MORE THAN 4.00 FEET FROM CALCULATED VALUES.
10. ONE FIELD SPLICE WILL BE PERMITTED. THE FIELD SPLICE SHALL BE LOCATED AT THE C ROAD.

INSTALLATION

10. SETTING OF THE JOINT SYSTEM SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
11. NEOPRENE EXTRUSION SHALL BE BONDED TO THE STEEL EXTRUSION WITH AN ELASTIC ADHESIVE AS RECOMMENDED BY THE JOINT MANUFACTURER. THE ADHESIVE SHALL MEET THE REQUIREMENTS OF ASTM D-4070-81.
12. THE EXPANSION JOINT SHALL BE ADJUSTED .25" ABUT. NO. 1 AND .21" ABUT. NO. 2 FOR EVERY 10° F CHANGE IN TEMPERATURE FROM THE MEDIAN TEMPERATURE OF 60° F AT THE TIME OF INSTALLATION OF THE JOINT.
13. AFTER THE JOINT SYSTEM IS INSTALLED, THE JOINT AREA SHALL BE FLOODED WITH WATER AND INSPECTED FOR LEAKAGE. IF LEAKAGE IS OBSERVED, THE JOINT SYSTEM SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR, AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
14. THE JOINT ASSEMBLY SHALL INCLUDE THE JOINT SEAL AND STEEL EXTRUSIONS AND SHALL BE FURNISHED BY ONE MANUFACTURER.

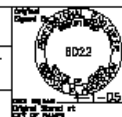
RECOMMENDED MANUFACTURERS OF THE SHOWN JOINT ASSEMBLY

MANUFACTURER	ITEM NAME	OPENING G NORMAL TO JOINT		MIN. INSTALLATION WIDTH NORMAL TO JOINT	OPENING D NORMAL TO JOINT			EXTRUSION TYPE
		MIN.	MAX.		#38"	#55"	#100"	
WATSON BOWMAN AND AGNE	SE-400	0	4	1.5	2.3	1.5	0.7	E OR A
D.S. BROWN	ASR-400	.5	4.5	2.0	2.8	2.0	1.2	SS A2

JOINT SHALL BE SUPPORTED TO MAINTAIN CORRECT ORIENTATION DURING PLACEMENT OF CONCRETE. SEE NOTE 7.

NO.	DATE	BY	DESCRIPTION
1	1/27/80	G.M.	CLARIFICATION/CORRECTION

DESIGNED JUB	SCALE SHOWN AS PER 24722P PRINTS ONLY
CHECKED JUB	CADD FILE NO. 11993-111-35
DRAWN JUB	DRAWING DATE DEC, 2004



CITY OF NAMPA
 KING'S CORNER
 PROJECT NO. 02-99148
 DEPARTMENT OF PUBLIC WORKS
 413 THIRD STREET SOUTH
 NAMPA, IDAHO

JUB ENGINEERS, Inc.
 260 S. Beechwood Avenue
 Suite 201
 Boise, Idaho 83708-0044
 Phone: 208.378.7300
 Fax: 208.343.0200
 www.jub.com

STRIP SEAL EXPANSION JOINT
 608' STEEL PLATE-GIRDER OVERPASS
 E. AMITY AVENUE OVER OREGON SHORTLINE RAILROAD
 STA. 25+58

LAST UPDATED:
 4-27-08
 SHEET
35
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SETTING GIRDERS



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THE END

QUESTIONS?